

(19) World Intellectual Property
Organization
International Bureau



(43) International Publication Date
18 August 2005 (18.08.2005)

PCT

(10) International Publication Number
WO 2005/076507 A1

(51) International Patent Classification⁷: **H04J 3/06**,
H04L 7/00

[GB/NL]; Groenewoudseweg 1, NL-5621 BA Eindhoven (NL).

(21) International Application Number:
PCT/IB2005/050454

(74) Common Representative: **KONINKLIJKE PHILIPS ELECTRONICS, N.V.**; c/o Shannon Lester, 1109 McKay Drive, M/S-41SJ, San Jose, CA 95131-1706 (US).

(22) International Filing Date: 3 February 2005 (03.02.2005)

(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
60/542,387 5 February 2004 (05.02.2004) US

(71) Applicant (for all designated States except US): **KONINKLIJKE PHILIPS ELECTRONICS, N.V.** [NL/NL]; Groenewoudseweg 1, NL-5621 BA Eindhoven (NL).

(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

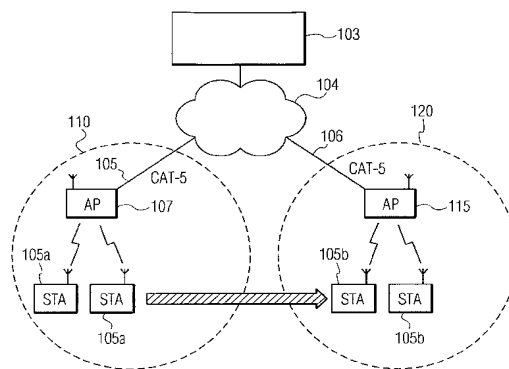
(71) Applicant (for AE only): **U.S. PHILIPS CORPORATION** [US/US]; 1251 Avenue of the Americas, New York, NY 10020 (US).

(72) Inventor; and

(75) Inventor/Applicant (for US only): **WHITTAKER, Tim**

[Continued on next page]

(54) Title: MEHTOD AND APPARATUS FOR SYNCHRONIZATION OVER 802.3AF



(57) Abstract: A method and apparatus for synchronizing the timing of multiple Access Points and/or additional synchronization units under an Ethernet protocol using the 802.3AF 'power over LAN' scheme includes the steps of (a) arranging a cable comprising at least four pairs of twisted wires connected between two or more fixed Access Points (AP) and/or Synchronization Units (SU) in a network; (b) assigning a first pair of the at least four pairs of twisted wire to carry a positive D.C. rail voltage to at least one (AP) or (SU); (c) assigning a second pair of the at least four pairs of twisted wire to carry a negative D.C. rail voltage to at least one (AP) or (SU); (d) providing to the first and second pairs of rails a series of synchronization pulses generated from a synchronization source and capacitively-coupled to the first and second pairs of twisted wire so as to supply a composite signal; and (e) reconstructing the generated synchronization pulses by detecting pulses on the positive and negative D.C. voltage rails at a receiving end by at least one (AP) or (SU). Thus power rail voltage and the synchronization pulses are provided on two pairs of the same cable (normally 4, 5 and 7, 8) so that conventional Category 5 cable and RJ-45 Ethernet connections can still be used. A WMTS unit contains all the hardware for receiving or generating the rail voltage and capacitively coupling the synchronization pulses with the power, for transmission to all the multiple Access Points in a WLAN to synchronize the timing so as to ensure smooth handoffs as wireless devices move from the control of one Access Point to the next.



WO 2005/076507 A1

**Declarations under Rule 4.17:**

- as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii)) for the following designations AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, UZ, VC, VN, YU, ZA, ZM, ZW, ARIPO patent (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT,

BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG)

- as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.17(iii)) for all designations

Published:

- with international search report

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.